



THE EFFECT OF TRAINING ON THE KNOWLEDGE LEVEL OF EMERGENCY NURSES ON COLLECTING, KEEPING AND TRANSFERRING BIOLOGICAL EVIDENCE IN FORENSIC CASES  
ACİLDE ÇALIŞAN HEMŞİRELERİN ADLİ OLGULARDA BİYOLOJİK DELİLLERİN TOPLANMASI, SAKLANMASI VE TRANSFERİNE İLİŞKİN BİLGİ DÜZEYLERİNE EĞİTİMİN ETKİSİ

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**ABSTRACT**

This study was carried out to determine the effect of training on the knowledge level of emergency nurses on collecting, keeping, and transferring biological evidence in forensic cases. The research was designed in a single group pretest-posttest quasi-experimental model. The sample group of this study consisted of 61 nurses working at the emergency service in a training and research hospital in one of the metropolitan cities of Turkey. While the mean score obtained from the questionnaire administered to nurses before training (pre-test) was  $57.81 \pm 16.70$ , the mean score achieved after training (post-test) was  $85.56 \pm 12.34$ . When comparing the mean scores of nurses before and after the forensic nursing training, a statistically significant difference was found. It was concluded that the training on collecting, keeping, and transferring biological evidence had a positive effect on the knowledge level of emergency nurses. Therefore, it can be suggested that such in-service training programs should be organized so that emergency nurses can manage forensic cases properly.

**ÖZ**

Bu çalışma acilde çalışan hemşirelerin adli olgulardan biyolojik delillerin toplanması, saklanması ve transferine ilişkin bilgi düzeylerine eğitimin etkisini belirlemek amacıyla yapılmıştır. Araştırma tek grup öntest-sontest yarı deneysel modelde tasarlanmıştır. Araştırmanın çalışma grubunu Türkiye'nin metropol şehirlerinden birinde bulunan bir eğitim ve araştırma hastanesinin acil servisinde çalışan 61 hemşire oluşturmuştur. Eğitim öncesi (öntest) hemşirelere uygulanan anketten elde edilen ortalama puan  $57.81 \pm 16.70$  iken eğitim sonrası (sontest) elde edilen ortalama puan  $85.56 \pm 12.34$ 'tür. Adli hemşirelik eğitiminden önce ve sonra hemşirelerin ortalama puanları karşılaştırıldığında istatistiksel olarak anlamlı bir fark bulunmuştur. Acil serviste çalışan hemşirelerin adli olgularda biyolojik delillerin toplanması, saklanması ve transferine ilişkin bilgi düzeylerine eğitimin olumlu etkisi olduğu ortaya çıkmıştır. Bu sonuca dayalı olarak acil serviste çalışan hemşirelerin adli olguların uygun yönetimini sağlayabilmesi için hizmet içi eğitim programlarının düzenlenmesi önerilebilir.

**Keywords:** Biological evidence, emergency nurse, forensic case, forensic nursing.

**Anahtar kelimeler:** Acil hemşiresi, adli hemşirelik, adli olgu, biyolojik delil.

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## INTRODUCTION

Expectations and demands of the changing and developing health system and the society have created different fields of work about the practices and roles of nurses (1). Forensic nursing is one of these fields of work. Recognized as a sub-specialty by the American Nurses Association since 1995, forensic nursing is the application of nursing science to legal procedures and is defined as application of forensic sciences, in combination with the education of nurses, to scientific research, examination of injured or dead victims, crime, violence, criminal activity and rehabilitation of traumatic accident perpetrators (2-4). According to this definition, it is clear that nurses must be informed of fundamental nursing practices as well as legal processes in approaching the forensic cases. The fact that the crime and violence, which is recognized as a universal health problem, have recently increased substantially and the individuals who are exposed to such cases apply to or are referred to health institutions, lays very important responsibilities on the nurses (5).

A major part of physical and emotional damages that external factors create on human being is firstly evaluated in emergency services of hospitals. In forensic dimension, this factor is examined carefully by expert health care personnel in terms of criminal and legal responsibility (6,7). Evidence is of great importance in fighting against crime and protecting the rights of a victim.

If evidence is not identified, collected, kept, and transferred in proper environments, this results in deformation in biological and physiochemical structures of evidence, loses and missing in the chain of evidence delivery (8). This also causes many undesirable problems leading to inability to punish guilty as required, disturbance of inner peace of victim and public (9). Healthcare personnel working at emergency service have serious responsibilities in preventing such problems (10). In this regard, nurses, members of the health team and providing uninterrupted service in health care service, have an important role. Nurses are the first staff encountering most of the forensic cases brought to any healthcare organization, making contact with a victim, his/her family, relatives, touching victim's belongings and body during his/her examination (11,12). However, there is not any forensic nurse, whose job definition is made in legal respects, in Turkey and there are few programs giving undergraduate and graduate education in forensic nursing (1). Therefore, the nurses, who have not taken any special training on forensic nursing, generally manage the forensic cases applying to any healthcare institution. It was found out in studies carried out in Turkey on the forensic nursing that most of the nurses were not informed about the concept of forensic nursing, did not get any in-service training on managing a forensic case, did not know anything about collecting, keeping recording and transferring biological evidence in forensic cases and were not aware of their legal responsibilities related to forensic cases (7, 9, 13-16). However, it is urged in the literature that the healthcare staff without any forensic knowledge negatively affects any scientific research on a forensic case and collection of evidence properly (17). It is of importance that nurses should know how to behave in

collecting, keeping forensic evidence and when encountering guilty or victim in terms of appropriate management of any forensic case in addition to nursing care service they provide in emergencies related to any forensic case (18). The detection of crime, identification of guilty, relieving victim and the nurse's fulfilment of his/her role in defending patient's right could only be ensured by the correct management of forensic case (18,19). In this regard, it is important that emergency nurses should receive training and reflect this training in practice so that they perform appropriate approaches in forensic cases (20). In this sense, Eldredge (21) indicated that receiving forensic medicine training increased the efficiency of nurses in collecting evidence. In addition to this, Abdool and Brysiewicz (18) and McGillivray (22) stated that emergency nurses had to receive training on forensic cases in order to keep evidence properly, know how to behave when encountering a guilty or a victim.

Starting from the importance of subject and the fact that nurses, serving as healthcare staff in the management of forensic cases in Turkey, did not have sufficient knowledge and ability, this study was carried out to determine the effect of forensic nursing training received by the nurses working in emergency service of a training and research hospital, located at a metropolitan city of Turkey and where forensic cases were seen frequently. It is considered that the results of this research will reveal the importance of training in proper management of a forensic case, will draw attention to the fact that nurses should receive training on this issue and thus, create an awareness.

## MATERIAL AND METHOD

### Type of Research

This research was designed in a single group pretest-posttest quasi-experimental model.

### Study Group of the Research

The study group of this research consisted of 75 nurses working at the emergency service in a training and research hospital in one of the metropolitan cities of Turkey. However, 14 of the nurses were excluded due to their training on collection, storage, and transfer of evidence. Thus, this study was conducted with 61 nurses who volunteered to participate.

### Administration of the Study

Data of this study were collected in August 2018. A form, specifying descriptive characteristics of the participants and measuring their knowledge level on collecting, keeping, and transferring biological evidence in forensic cases, was utilized in the collection of data. This form was administrated in two stages as pre-test and post-test. The pre-test and post-test were encoded so that the assessment would be made of the same person. In the first stage, the subjects were distributed questionnaires before training and were given 20 minutes to fill out. After collecting questionnaires, the subjects were given a four-hour training on general information related to collecting, keeping, and transferring biological evidence from forensic cases and the responsibilities of nurses at this stage. After completing the training, the same data collection form was re-administrated to subjects in the second stage. The subjects were not informed about the fact that the questionnaire would be

re-administrated in order to prevent keeping questions in mind.

#### Data Collection Tools

The data were collected by a questionnaire developed by researchers following a literature search (11, 16, 19, 22-24). This form consisted of two sections. While the first section included 6 questions on descriptive characteristics of subjects, the second section had 10 questions measuring the knowledge level of emergency nurses on collecting, keeping, and transferring biological evidence in forensic cases. The questionnaire was scored over 100 points, and each correct answer was scored 10 and each wrong answer was scored 0. The questionnaire was sent to three academic members with a forensic nursing certificate for expert opinion, and required corrections were made in line with the opinions of these academic members before administrating the questionnaire.

#### Assessment of Data

The data obtained from the research were analyzed utilizing the SPSS 22.0 statistics program. While the number, percentage were used in assessing the data related to the descriptive characteristics of the subjects, the mean and standard deviation values were utilized to assess the scores related to the questionnaire. Paired sample t-test was administrated in order to assess whether there was any difference between pre-test-post-test mean scores of the subjects.

#### Ethical Issues

Before conducting this research, written permissions were taken from the ethical committee (Reference No: 2018/06) and the institution where the research was

administrated. All subjects were informed in detail about the administration of the research. They were stated that participating in the research was voluntarily and they could withdraw from the study at any time. Written consents were obtained from the subjects before the data collection stage.

#### RESULTS

The descriptive characteristics of nurses are provided in Table I. Accordingly, 59.0% (n= 36) of the nurses was female and 41.0% (n= 25) of them was male with an average of age  $24.80 \pm 3.96$  (range: 19-39). 82.0% of the nurses were single, 68.9% had a bachelor's degree, 91.8% had 0-5 years working experience and 100.0% was serving as an emergency nurse for 0-5 years.

The comparison of emergency nurses' knowledge level before and after the training on collecting, keeping, and transferring evidence in forensic cases is provided in Table II. Accordingly, while the mean score of nurses before training (pre-test) was  $57.81 \pm 16.70$ , their mean score after training (post-test) was determined as  $85.56 \pm 12.34$ . When examining the results of paired sample t-test, showing whether there was a difference between the mean scores of pre-test and post-test knowledge level of nurses, it was achieved that there was a significant difference between the knowledge level of nurses before and after training ( $t= 13.800$ ;  $p<0.001$ ).

#### DISCUSSION

The biological evidence collected from forensic cases are of importance for detecting crime, identifying and punishing guilty and nurse's protecting both his/her

**Table I.** Descriptive characteristics of nurses (n= 61)

Features	n	%
<b>Gender</b>		
Female	36	59.0
Male	25	41.0
<b>Age</b>	24.80 $\pm$ 3.96 (range 19-39)	
<b>Marital Status</b>		
Single	50	82.0
Married	11	18.0
<b>Education</b>		
High School	11	18.0
Associate Degree	6	9.8
Bachelor	42	68.9
Postgraduate	2	3.3
<b>Professional Seniority</b>		
0-5 year	56	91.8
6-10 year	2	3.3
11-15 year	3	4.9
<b>Working Year in Emergency</b>		
0-5 year	61	100.0

**Table II.** The comparison of emergency nurses' knowledge level before and after the training on collecting, keeping, and transferring evidence in forensic cases (n= 61)

Question Form	Mean	SD	Min.	Max.	t	p
Pre-test Knowledge	57.81	16.70	20.58	90.42		
Post-test Knowledge	85.56	12.34	48.68	99.80	13.800	.000*

\*p<0.001, SD: Standard Deviation, Min: Minimum, Max: Maximum

and victim's rights on a legal basis. It was achieved in this study that the training on collecting, keeping, and transferring biological evidence in forensic cases that emergency nurses received had a positive effect on the knowledge level of these nurses (Table II). Few studies carried out on this subject also confirm the results of this study (13,20,25). It is reported in the literature that the most frequent problems are the forensic specimen taken in emergency services are improper, are not kept in appropriate conditions, unlabeled or labelled wrongly or improperly and the shipments incompatible with the chain of evidence delivery (7,13,26). It is argued in the study carried out by Abdool and Brysiewicz (18) on defining the roles of forensic nurses in emergencies that 91% of emergency nurses did not have sufficient knowledge on the forensic nursing. In the same study, one of the nurses stated that "We could only keep bullets, pulled out from a victim of a gunshot injury, as evidence for forensic cases. However, we do not have any information on keeping clothes, sperms, powder residue etc." Another nurse indicated that "Nurses did not have any training both on keeping evidence and fulfilling the requirements of chain of evidence protection, and they learn this by trial-and-error method". All nurses in that study stated that nurses should get training on forensic nursing (18). In the study by Erkan et al. (14) on awareness analysis of nurses related to forensic nursing, 55.36% of the subjects expressed that they were not informed on their legal responsibilities and roles on the management of a legal procedure. In another study (27) on the forensic experience of Saudi nurses, it was found out that 66% of nurses did not have any information on the forensic nursing and 77% of them did not receive sufficient training on the forensic nursing. It is stated in the 280<sup>th</sup> article of the Turkish Criminal Law No. 5237, "any healthcare staff, who does not inform or delays in informing competent authorities about any evidence related to a crime when s/he is on duty, is punished with imprisonment up to one year" while the 281<sup>st</sup> article indicates that "anybody, removing, deleting, concealing, amending or disrupting the evidence of a crime for hiding the truth, is punished with imprisonment from six months to five years" (28). Therefore, if nurses damage any evidence involuntarily, both victims may lose their rights and they may face legal sanctions.

As seen in above-mentioned studies, nurses do not have sufficient knowledge on collecting, keeping, and transferring biological evidence in forensic cases. Yet, the development of theoretical knowledge level of nurses is of paramount importance in proper management of forensic cases. The importance of training is undeniable in the development of theoretical knowledge. In this regard, this study concluded that the training given had a significant effect on the knowledge level of emergency nurses on collecting, keeping, and transferring biological evidence. It can be said that this is important in preventing nurses to involuntarily damage evidence, enabling them to protect themselves on a legal basis and contributing to appropriate management of the process.

## CONCLUSION

It was concluded that the training on collecting, keeping, and transferring biological evidence in forensic cases had a positive effect on the knowledge level of emergen-

cy nurses. Accordingly, it can be suggested that in-service training programs on enabling emergency nurses to manage forensic cases properly, and this should be maintained with current approaches and theoretical and practical training.

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